

described in detail with reference to the drawings. The process of fabricating an optical fiber preform of the embodiment is as follows. That is, the method in fabricating the embodiment fabricates the optical fiber preform by conducting the following steps 1) to 7) sequentially.

The steps 1) to 7) are: 1) porous core rod producing step by VAD; 2) core rod dehydrating step; 3) core rod vitrifying step; 4) core rod stretching step; 5) second porous cladding forming step by VAD; 6) second cladding dehydrating step; and 7) second cladding vitrifying step.

Hereafter, a specific example of each of the steps will be described.

1) Porous core rod producing step by VAD

This step is a step of depositing a first cladding 3 having an outer diameter D so as to surround a core 2 having an outer diameter d to produce a porous core rod 1 to be $D/d \geq 4.0$ by VAD. The production of the porous core rod 1 is conducted inside a reaction vessel 11 as shown in Fig. 1. Inside the reaction vessel 11, a seed rod (not shown) that can be rotated, as indicated by an arrow A shown in Fig. 1 and drawn, is inserted. Fine glass particles for forming the porous core rod 1 are deposited and grown on the surface of the seed rod to produce the porous core rod 1.

The fine glass particles are formed by gases blown out of a core burner 12 and a first cladding burner 13. The core

burner 12 is charged with fuel gases (oxygen and hydrogen, for example) and source gases (SiCl_4 and GeCl_4 , for example) and the fuel gases generate oxyhydrogen flame. The oxyhydrogen flame causes flame hydrolysis reaction in the source gases gushed out of the core burner 12 to form the fine glass particles for the core 2.

Additionally, the first cladding burner 13 is charged with fuel gases (oxygen and hydrogen, for example) and a source gas (SiCl_4 , for example) and the fuel gases generate oxyhydrogen flame. The oxyhydrogen flame causes flame hydrolysis reaction in the source gas gushed out of the first cladding burner 13 to form the fine glass particles for the first cladding 3.

Furthermore, as described above, the core 2 is doped with Ge, thereby making a refractive index of the core 2 higher than that of the first cladding 3.

Moreover, in one embodiment, the outer diameter d of the core 2 was set to 30 mm, the outer diameter D of the first cladding 3 was set to about 150 mm, and D/d was set to about 5 in the step described above.

2) Core rod dehydrating step

This step is a step of dehydrating the porous core rod 1 to reduce the OH group concentration in the porous core rod 1 to 0.8 ppb or less by weight ratio. In addition, the inventor confirms that the light absorption in the waveband of 1.36 to $1.43\ \mu\text{m}$ can be reduced nearly equal to the light absorption

in the waveband of $1.31\ \mu\text{m}$ when the OH group concentration in the porous core rod 1 is made 0.8 ppb or less by weight ratio.

The step of dehydrating the porous core rod 1 is conducted such that the porous core rod 1 is allowed to stand in a dehydrating of He mixed with chlorine or fluorine at a temperature of about 1200°C . Furthermore, the dehydration may be conducted such that it is allowed to stand in an atmosphere with oxygen added. The dehydrating step reduces OH groups and impurities inside the porous core rod 1 and allows the OH group concentration to be 0.8 ppb or less by weight ratio.

Moreover, the step of dehydrating the porous core rod 1 is conducted by a simple method in which the porous core rod 1 is only allowed to stand at high temperature. That is, it does not need costs of equipment for a plasma etching apparatus for etching the surface of the porous core rod to remove the OH groups, as the above-mentioned proposed example, and processing costs are inexpensive as well.

3) Core rod vitrifying step

This step is a step of forming the porous core rod 1 to be transparent and vitrified. The porous core rod 1 is formed to be transparent and vitrified by sintering the dehydrated porous core rod 1 in an He atmosphere at temperature of 1400 to 1500°C . The is conducted in an atmosphere mixed with chlorine or fluorine as necessary. The porous core rod 1 is converted to a transparent vitrified core rod having an outer